

By botanist and fruit fanatic Rolf Blancke

✘ As part of his project to publish the most comprehensive book ever produced for general readers on the world's tropical fruits, botanist Rolf Blancke is writing a five-part series for www.freshfruitportal.com on his exotic fruit experiences.

Research for my new book "Tropical Fruits of the World", which is funded and published by [Zona Tropical Publications](#), led me twice to the Andean highlands of western South America. The book, which will cover about 330 tropical fruit species, will also contain important spices, grains and tubers.

The Andean mountain range, which is bordered by the vast Amazon lowlands in the east and rainforests and deserts to the west, is a very diverse and fascinating region with peaks rising to 6,900 meters (22,637ft), with active volcanoes and cold, dry, wind-swept puna plains in the highlands.

When traveling in the Andes one is constantly reminded of the long, rich cultural history of peoples like the Moche, Nazca, Inca and many more. It is a world of its own. The Andes are also a cradle for indigenous fruits like the Inca berry (aka Cape Gooseberry, *Physalis peruviana*), the Banana Passionfruit (*Passiflora mollissima*), pseudo-cereals like Amaranth and Quinoa and tubers like the well-known potato and many other, much lesser known tubers like the Oca (*Oxalis tuberosa*), Olluco (*Ullucus tuberosus*), Arracacha (*Arracacia xanthorrhiza*), Maca (*Lepidium meyenii*), Mashua (*Tropaeolum tuberosum*) or Mauka (*Mirabilis expansa*).

These were domesticated here millennia ago and played a very important part in the diet of pre-Colombian cultures as well as in rituals and ceremonies. The tough tubers can survive under the harsh, high altitude conditions with low temperatures, strong winds and droughts, which are constantly present in the Andes. This made them the ideal crops for the people that lived high in the mountains.

The goal of my trip to the Andes was to take photos of fruits but also pseudo-cereals and especially these almost forgotten but nevertheless very interesting and often very hard to find tubers native to the Andean highlands. Visitors to the Andes commonly confuse these tubers, which belong to distinct families like Oxalidaceae, Brassicaceae or Basellaceae, with potatoes, which



Olluco. Photo: Rolf Blancke

are also native to the Andes but belong to the Nightshade family (Solanaceae).

Although many tubers like Oca and Olluco are very common in markets, it is not easy to find the small, inconspicuous, only locally cultivated plants in the vastness of the Andes mountains. Besides being hard to find, the people that grow them in their home gardens mostly only speak Quechua, the ancient language of the Incas.

Some of these tubers like Mauka and Maca were regarded by the Spaniards as a symbol of indigenous culture and rituals. With the idea to abolish local traditions, they were banned from cultivation in the colonial era. Sometimes people cultivating these crops in colonial times were punished with the death penalty. These plants only survived in remote valleys of the Andes and are only slowly regaining local importance.



Quinoa plants. Photo: Rolf Blancke

With a local, Quechua-speaking indigenous guide we drove many hours in a battered, old pickup truck on rough dirt roads up towards the snow-peaked mountains of the Cordillera Blanca in the region of Huaraz in northern Peru. One is instantly overwhelmed by the scenic views of the surrounding mountain ranges, which seem to be even closer in the crisp, almost incredibly transparent mountain air so typical for the Andes.

The countryside at 3,400 meters (11,154ft) in altitude consists of small fields of potatoes, cereals like barley and quinoa and scattered homes built with clay bricks and grass-thatched roofs. For the tubers I was looking for, which are only grown on a very small scale, we had to search in homes and in gardens. After a couple of hours we managed to find a few square meters of Oca plants, which belong to the Wood Sorrel family (Oxalidaceae).

With permission of the owner we pulled out a plant and took photos of the very colorful, red, purple and/or yellow tubers. Later we also found Olluco, which has yellow, pink or purple tubers and Mashua (*Tropaeolum tuberosum*) yellow tubers. Along the way we encountered equally colorful plantations of purple and pink Quinoa plants, Amaranth fields and Andean Lupines (*Lupinus andinus*).

The tubers and pseudo-cereals of the Andes deserve a lot more attention, since they are often very nutritious and tasty. Most Andean tubers are used similar to potatoes and boiled, fried, roasted or baked. Although Amaranth and Quinoa - with extraordinary content of

essential amino acids and minerals like phosphorous, magnesium and iron - have become somewhat popular in the western world, the tubers remain largely forgotten.

Many tubers like potatoes but also Oca and other tubers are traditionally conserved in the Andes by freeze-drying them in the sub-freezing temperatures at night and dry, sunny days. This process dehydrates the tubers and they can be stored for up to a decade without spoiling. Freeze-dried tubers, which have a very intense, nutty and sometimes slightly sweetish taste, are used in soups and stews in the mainly vegetarian diet of the indigenous population.

Another form of conserving tubers is by immersing them for weeks in cold, mineral-rich mountain stream and freeze-drying them afterwards. This treatment, which changes the brown tubers to snow-white, is caused by the high content of minerals in the water. These dehydrated tubers, which are locally called "chuño" are a common sight on local markets.



Oca. Photo: Rolf Blancke

The Maca tuber grows in even higher altitudes of 4,000-4,5000 meters (13,123-14,763ft), where the plant is cultivated on cold, windy plains. The plant forms low rosettes and small 3-6cm (1.2-2.4in) wide, gray or purplish, turnip-like tubers. The Maca, which is a very protein- and mineral-rich tuber, has long been used by peoples of the Andes as a high altitude crop. The plant has long been revered as an aphrodisiac, for people and for livestock.

During this trip I could find almost all the plants I was looking for, thanks to the help of friendly locals who appreciated my interest in their ancient crops. The one I couldn't find was Mauka, which is grown only very locally in home gardens in northern Peru and parts of Ecuador. Even on a second trip to Ecuador I didn't get lucky in finding this rare and local Andean crop.

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